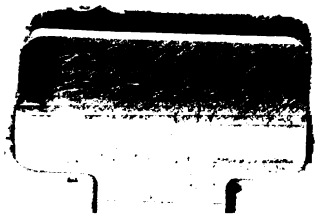

LIVE STOCK COMMISSION

OF

NEW JERSEY.

Circular No. 1

HOG CHOLERA

AND

SWINE PRODUCTION

TRENTON, N. J.
MacCrellish & Quigley, State Printers, Opposite Post Office.

1912.

Live Stock Commission of New Jersey.

MEMBERS.

HON. EPHRAIM T. GILL, *Chairman*, ...Haddonfield, N. J.

DR. T. EARLE BUDD, *Veterinarian*, ...Orange, N. J.

DR. JACOB G. LIPMAN, ...New Brunswick, N. J.

MR. SAMUEL S. CONOVER, ...Harrisonville, N. J.

PROF. FREDERICK C. MINKLER, ...New Brunswick, N. J.

Secretary and Executive Officer.

PREPARED BY THE SECRETARY AT NEW BRUNSWICK, N. J.
DECEMBER, 1911.

Hog Raising in New Jersey.

The question of pork production interests a great many New Jersey farmers, for we have at hand such excellent markets for meat products and there is a steady demand for breeding animals of modern type and early maturing qualities. Only a few years ago the farmers in South Jersey, particularly, depended largely upon their swine products to pay the rent and in certain sections of the State the industry reached immense proportions. The popularity and increased profits resulting from extensive truck farming, coupled with losses experienced from cholera and other prevalent diseases, materially changed farm practices, and resulted in the growing of increased areas of market garden and money crops and fewer swine. In certain portions of the State, however, hog raising has continued to flourish; while fruit and truck farmers as well as dairymen recognize the value of swine when it comes to utilizing certain waste or common by-products and converting them into readily salable and profitable market products. Nearly every farmer keeps a few hogs for meat or market purposes, and is interested in economical feeding and successful management of his herd.

CHOOSING THE BREED.

There are good as well as inferior specimens of all breeds of swine. Any of the established fat or bacon breeds can be profitably produced in the State, and the choosing of the breed is an individual matter. Select utility animals of your favorite breed with due consideration to your local market demands. It is choosing the individuals within a given breed rather than any particular breed that measures success or failure. The Duroc Jersey is a native of this State and is grown extensively; while the Berkshire, Poland China and Chester White breeds are popu-

lar fat or lard types. The Yorkshire and Tamworth breeds are suited for bacon production, but our markets do not encourage bacon production, prefering rather a shorter fed carcass of the fat hog type. It is necessary to have an abundance of skim milk or buttermilk to grow bacon of the highest quality most economically, and the most of our Jersey dairymen sell their whole milk rather than cream or butter, and do not have access to such products.

SELECTING THE BROOD SOW.

The brood sow is the unit of pork production. Regardless of her breed she should have certain definite characteristics typifying a happy combination of good breeding with individual excellence. The easiest and most inexpensive method of embarking in the swine breeding business is to purchase two or more pure bred gilts, safe in pig to unrelated sires, to be used as foundation stock. Selection of the best females from their progeny, and mating them to a useful growthy quality male will establish within a very short time a high class herd. In selecting a sow for breeding purposes the following points should be emphasized:

1. The gilt should be pure bred; a typical utility representative of her breed.

2. Should trace to a large even litter farrowed by a kindly disposed, heavy milking dam that displays vigor, quality and symmetry.

3. She should evidence early maturity; possess a clean shapely head, large bright eyes, heavy jaws, light jowl, neat ears, short neck; have a long straight strong back, broad meaty loin, smooth compact shoulders, deep well arched sides, even width, plump shapely hams; a neat trim underline dotted with many evenly placed rudimentaries; short straight legs with clean dense bone; stand upright on strong well supported pasterns; and exhibit style and finish throughout.

4. She should be a pasture product rather than a pen fed, chubby pet.

5. She should possess quality; be in a vigorous growthy condition, free from wrinkles, and give promise of development of

flesh in region of valuable cuts, thus yielding a higher dressing percentage of edible pork.

SELECTING THE MALE.

The male in service should be of the same breed as the sows, though not related, if the animals are to be used for breeding purposes. Inbreeding or cross-breeding may be resorted to if the object is to grow only market animals, but even then the practice is discouraged by our most successful growers. The male should be of the same type, though masculine, resolute and vigorous. Exercise is of prime importance, and many males are inactive due to high feeding in cramped quarters. Mature males should be used if possible as their services usually result in stronger, larger and more uniform litters, espcially with young sows. The use of the breeding crate greatly simplifies this practice. One uninterrupted service will suffice, and the animals should be separated before injury results, as often happens when heavy males annoy young gilts. Coarse headed, heavy shouldered, narrow backed, peaked rumped males with long legs, shallow bodies and slim hams should never be used for service, for their pigs will show like habits of growth and conformation. Quality and finish are absolutely necessary.

AGE TO BREED.

Well grown gilts may be bred when eight months old. This will bring them to farrow at one year; the period of gestation being 114 days, or approximately 16 weeks. If suitable buildings are at hand, March and April pigs are profitable; but unless appropriate quarters are available early pigs are troublesome and farrowing time had best be delayed until early May. Two litters per year may be secured from mature, well cared for sows; the fall farrow being dropped during September or early October. Brood sows should not be fat or fleshy at mating season, or at any other time unless fitted for slaughter. Small litters, weak pigs, uneasy mothers often result from such practice. Neither

should she be expected to thrive on an exclusive corn and water diet. Breeding animals of every class thrive more vigorously on a mixture or variety of feed stuffs, and require regular exercise.

CARE OF THE BRED SOW.

Clean, sanitary, roomy quarters must be furnished, both before and after farrowing and every precaution taken to keep the sow active, healthy and comfortable. A suitable ration for early stages of pregnancy during the winter months would be as follows:

		Nutritive Ratio.
Wheat Middlings,	75 lbs.	1:6.2
Crushed Oats,	40 "	
Corn Meal,	100 "	
Soy Bean Meal, or Linseed Meal,	10 "	
Bran,	20 "	

Fed as a thick slop twice daily in such amounts as will keep the sow in a lean vigorous condition. In addition skim milk may be fed, also alfalfa or clover hay furnished in suitable racks. Fresh water as well as needed minerals should be supplied in abundance. The sow should be separated a week before farrowing, given a more laxative and bulky ration in order to cool down her system and retard milk production. Many sows and their young pigs are often killed with kindness at farrowing time by over feeding. A rail or 2 x 4 placed around the walls of the farrowing pen 8 inches from the floor will often protect the pigs from being crushed or crippled by a restless mother.

THE YOUNG PIGS.

When the pigs are three weeks old they may be tempted to eat by placing in low protected troughs thin slop or soaked grains, and later can be given a nutritious growing ration. The male

pigs should be castrated when four or five weeks old, and all may be weaned when 8 or 10 weeks old, after which they should be kept growing steadily. Stunted pigs eat their heads off. Youngsters of the same age should be yarded and fed together, rather than allow the older pigs to rob the younger litters as is the case when all ages run in common yards.

PASTURE FOR BROOD SOWS AND PIGS.

In the absence of clover or other suitable grass pasture the following is recommended:

MIXTURE PER ACRE.

Oats,	1 bu.
Canada Field Peas,	1 bu.
Barley,	2 pecks.
Rape,	8 lbs.
Red Clover,	5 lbs.

Mixed together and drilled early in the spring to be followed in September by a cover crop mixture of rye or wheat, 60 lbs., winter vetch 25 lbs., and cow horn turnips 2 ozs., the same being drilled in on the pasture stubble about September 1st. This will supply forage for the fall season.

RATION FOR MARKET PIGS.

Barrows or sows intended for fattening should be kept growing steadily from birth. The following mixtures of feed is recommended:

First Period.			*Nutritive Ratio.*
3 to 6 months of age,	Corn Meal,	8 parts.	1:6
	Middlings,	2 "	
	Tankage,	1 "	
With pasture.			
Second Period.			
6 months to 1 year,	Corn Meal,	10 parts.	1:6.5
	Middlings,	2 "	
	Tankage,	1 "	

Skim milk or buttermilk fed with either or both of the above greatly increases the daily gains and cheapens the cost of feeding. Pure water should be before them at all times, also charred cobs, mixed with wood ashes, salt and sulphur. Ear corn can be economically substituted for the corn meal.

ALFALFA *vs.* DIGESTER TANKAGE.

The first trial of an experiment to determine the comparative value of alfalfa hay and tankage as a source of digestible protein has just ended at the New Jersey Station. Two pens made up of four Berkshire gilts each, of same weight and age, were selected. Lot 1 was fed a mixture made up of 8 parts corn meal, 2 parts wheat middlings and 1 part digester tankage. Lot 2 was fed a mixture of 8 parts corn meal, 2 parts wheat middlings and all the alfalfa hay that they would clean up, the same being fed in appropriate slat racks. Both lots were given the grain mixture as a thick slop, three times daily and allowed all they would eat with relish. The test was continued for 60 days with the following results: Lot 1 gained 339.5 lbs. live weight and consumed 1,309 lbs. of the grain mixture; while lot 2 gained 339 lbs. live weight and consumed 1,300.5 lbs. of feed including the alfalfa hay. Lot 1 produced 100 lbs. gain from 385 lbs. of feed, while Lot 2 produced 100 lbs. gain from 384 lbs. of feed. The weights and gains are almost identical, and since the proportion of corn and middlings was the same in both mixtures it is an easy matter to compare the alfalfa and tankage. Lot 1 consumed 87.5 lbs. of tankage, while Lot 2 consumed 81 lbs. of alfalfa hay. Rating tankage at cost, $47 per ton, and alfalfa hay at $22 per ton, the latter was more economical. The carcasses of both were firm and well marbled and the butcher bought all at the same price. Where alfalfa is produced on the farm its cost seldom exceeds $6 per ton. The economy of using this home-grown protein carrier as a feed for swine is readily seen. It adds bulk, and is very palatable. The Wisconsin Station reports that with corn alone it required 537 lbs. of grain to produce 100 lbs. gain; with middlings alone 522 lbs.; with corn and middlings combined 439 lbs.;

while the gain in our experiment was 100 lbs. for 385 lbs. of feed. It will be readily seen that there is a great advantage in both gain and economy by feeding either tankage or alfalfa hay in combination with corn and middlings.

FEEDING GARBAGE.

Refuse products from large hotels or city collections are fed to hogs extensively, and invariably cause a variety of disorders. In the first place its composition varies greatly from day to day and often times death results from its use. If used on a large scale arrangements should be made to sort the mixture and steam or cook thoroughly before feeding; furthermore, it should never be fed exclusively, but rather be mixed with corn and middlings or other staple feeds of known composition. In this way the feeder can eliminate many of the disorders often encountered, and at the same time utilize the bulk of the collected feed. The feeding of small amounts several times per day of such products will give more satisfactory results.

HOUSING.

Dry, well ventilated quarters are more essential and better adapted for swine than warm cramped stables. Two general systems of housing are practiced with swine; the first being to have all animals housed in one main piggery; the other the use of the colony system which enables each brood or group of animals to have a separate and distinct house. Both have their advantages under certain conditions that may differ at different farms, and the type selected must be the result of a careful study of the local conditions existing at the particular farm. Sunshine is a germ killer, and should be allowed to penetrate every corner.

MANAGEMENT OF THE HERD.

A pig is nothing more or less than a machine whose function is to convert farm products into salable meat products. Very

often he is rated as a scavenger; fed only because he squeals; and is looked upon merely as a convenient source of disposing of refuse products. There is no animal that responds to feeding and decent treatment more promptly than the pig, and he is a dependable source of profit if given average care and fair treatment. It must be remembered that the most economical gains are made when the animal is young, *i. e.*, under nine months of age, and that gains are costly after full growth and maturity are reached. Pigs gain most economically when from 4 months to 10 months of age, and, generally speaking, it costs more to put on the last 100 lbs. of weight of a 300 lb. hog than it does to produce the first 200 lbs. of body weight. A feeder that does not secure an average gain of one pound per day from birth with his pigs, either has inferior specimens or does not feed and care for them in the most up-to-date manner. The most profitable time to market a fat hog it when he weighs from 225 to 250 lbs. live weight, and he should tip the scales at these figures when eight months old. Larger gains are common with our best feeders. The pig that will develop into the heaviest quality hog, in the shortest length of time, and make the best gains from a given amount of feed fed, is the ideal pork-making unit.

PREVALENCE OF HOG CHOLERA.

This dreaded swine disease has been unusually destructive during the past year. The shore counties reported early losses, and later in the summer the Commission found outbreaks in nearly every county. No funds were available for the manufacture or purchase of serum useful in immunizing well herds, but a limited amount was secured from other States and distributed at cost to owners of swine in sections of the State where the disease was raging, upon receipt of application for assistance from the farmers. A circular was sent out giving the early symptoms of the disease, methods of prevention, and outlining proper feeding, and management of the swine herd. Investigations reported by government experts detailed to research work in swine diseases show that the use of serum is very effective in checking this terrible

disease that has caused untold losses among swine growers in this country.

NATURE OF THE DISEASE.

Hog cholera is generally prevalent during fall and early winter. It is an infectious disease in which the lymphatic glands, intestines, lungs, kidneys and liver are generally inflamed. The inflammations are hemorrhagic in character, the lymphatic glands assuming a grayish-red character, while the discoloration in other organs and tissues may vary in size from very small red spots to large irregular dotted areas.

There are two forms of hog cholera: acute and chronic. In acute form the disease is very virulent and animals affected die from within a few hours to a few days after showing characteristic symptoms. In chronic form the disease does not seem to be so virulent and usually lingers from a few weeks to even months; animals finally dying in an emaciated condition or recovering in some few cases. The length of time required for hogs to become sick after being exposed to the disease varies from 6 to 14 days or may be even longer.

SYMPTOMS.

Lack of appetite may be the first disorder noted, followed by rapid and labored breathing. Animals infected may be found lying in their beds showing little disposition to move, and upon being forced to walk show weakness in their hind quarters, a staggering gait with arched back, and after moving about for a time may fall sprawling with labored breathing showing in the flanks. Constipation at the outset is usually followed later by diarrhea. Purplish and reddish discoloration of the skin appear on the under side of the belly and behind the ears, especially noticeable on white pigs. The normal temperature of the hog is 103 degrees F., but in cases of hog cholera it may be as high as 105 or 106 degrees and occasionally higher. Some pigs die before showing few if any outward symptoms of the disease. An autopsy in

these cases as well as in all forms of hog cholera may be necessary to fully establish the cause of death. Besides the skin showing red or purple blotches, the fat under the skin may show red bloody spots, usually very small, which cannot be washed off with water. Quite frequently portions of the lobes of the lungs may be collapsed, resembling the liver in appearance and touch. In acute cases small red spots due to rupture of the small blood vessels in the lungs appear, and when found are a sure indication of hog cholera. The lung consolidation is not as characteristic a symptom as the small red spots. In acute forms small bloody spots may be found on the surface of the heart similar to those in the lungs. The liver does not usually show any marked change from normal conditions. The spleen, as viewed in autopsy, in acute cases, is quite large, dark and soft. In prolonged chronic cases it may be smaller than normal and grayish in color. The kidneys usually appear spotted with very small red speckles, resembling turkey eggs in appearance, and is considered the most characteristic of hog cholera symptoms. The mucous membrane of the stomach is red and inflamed, and a careful examination will generally show ulceration extending over considerable area separated from healthy portions by a more or less distinct line. The intestines in acute cases show inflammation and are frequently blood stained. In the slow chronic forms of hog cholera, ulceration of the inner surface of the large and small intestines is found. Especially is this true along the inner surface of the large intestine where button-shaped ulcers varying in size from mere specks to that of a 25 cent piece are to be found. These spots are yellowish in color with dark centers raised above the surrounding healthy tissue. The presence of these ulcers is a positive diagnosis of hog cholera, though in many acute cases they do not have time to develop.

SICKNESS DUE FROM IMPROPER FEEDING.

Frequently hogs are made sick by improper feeding; there is rarely cause to mistake it for hog cholera except in cases of swill-fed hogs. A disease among swill-fed hogs has been reported by Dr. V. A. Moore closely resembling hog cholera which was traced

to the presence of powdered soaps in the slops. These soaps usually contain large amounts of alkali, and when mixed with garbage used for feeding hogs, brings about lesions in the internal organs similar to those seen in hog cholera. If the illness is due to presence of alkali in the swill a change to proper food will result in improvement of the animals, but if this change of diet does not remedy the trouble, then hog cholera should be suspected at once, and hasty steps taken to obtain serum.

MANAGEMENT OF CHOLERA HERDS.

Immediately disinfect the premises thoroughly. Separate the well hogs from the sick ones, and divide the healthy animals in two or more groups, and isolate them as completely as is possible. All carcasses of hogs which have died from cholera should be burned or buried deeply and covered with quicklime. As the germs of cholera gain access to the system through feeding, the way of prevention is well marked. All feeding troughs and utensils should be thoroughly cleaned and fumigated, the yards plowed and preferably planted with a forage crop in season. Feed sparingly, using a laxative, easily digested and nourishing ration. When hog cholera serum is used, the hogs treated should remain together in the infected yards. The possible introduction of the disease into the pens by people, dogs, birds, etc., should be guarded against, especially if hog cholera is in the neighborhood. Whenever it is necessary for a person to enter a hog lot when the disease is present, the shoes should be thoroughly cleaned and disinfected. Persons taking care of diseased animals should take necessary measures to prevent the spread of the disease, and see that others take similar precautions.

HOG CHOLERA SERUM.

Animals that have recovered from hog cholera or have been immunized by inoculation, are thereafter considered immune. These pigs are then injected with large amounts of blood taken from a hog sick with hog cholera to make them hyper-immune,

that is, increasing the properties in their blood to overcome or resist the disease. They are then bled from the tail at intervals of a few weeks. After several bleedings, they are reinoculated with virulent blood perpetuating the hyper-immunity. This can be carried on until the tail is consumed when the pig is bled to death; the blood collected and one-half per cent. carbolic acid added to preserve the serum.

INOCULATION WITH HOG CHOLERA SERUM.

Serum Simultaneous Method.—The pig is injected subcutaneously with proper amounts of serum and virulent blood. This method is used where the disease does not exist or where it has just started. The immunity resulting therefrom lasts longer than from use of serum alone, usually from 6 months to one year, or perhaps for life. There is considerable danger from using this virulent blood method, as the practice has been known to start outbreaks of hog cholera. Veterinarians only should conduct the treatment. It is not generally recommended by investigators at the present time.

Serum Alone Inoculation.—Each pig is treated with the proper amount of serum the dose varying with age and size. It is useful with herds where the disease already exists, and is used only on seemingly healthy animals. *It is not a cure,* but a preventative, and of no use to sick hogs. The immunity last for a few months only in well pigs; but when used on pigs exposed naturally to the disease, the animals may be considered immune thereafter. It is especially useful and used extensively where pigs are sold, shipped or exhibited at fairs. The usefulness and value of hog cholera serum has long been considered beyond the experimental stage. Its use has been saving over 90% of the animals treated, and thousands have been treated successfully.

DOSES OF SERUM.

The amount of tested serum to use per animal is approximately as follows:

Under 25 lbs.	weight,		.....	15 cc.
For 100	"	"	.....	25 cc.
" 200	"	"	.....	40 cc.
" 300	"	"	.....	50 cc.
" 400	"	"	.....	60 cc.
" 500	"	"	.....	70 cc.

Cost of Producing Serum.—A 125 lb. hog will produce about 550 cc. (cubic centimeters) of serum at each bleeding, and at his death 1,300 cc., making a total of 3,500 cc. The dose for a 125 lb. pig is about 30 cc., so that the average total production from a 125 lb. hyper-immune pig is about 115, 30 cc. doses. When it is known that it takes the blood of a cholera pig of equal weight to hyper-immunize every pig used for the production of hog cholera serum, some idea of the cost is at hand. Other expenses are losses from death of pigs producing hog cholera blood before they are bled; also from death of pigs used to test potency of the serum produced before it is sent out for use.

PREVENTION OF DISEASES.

All animals kept in good condition have a natural tendency to ward off disease; and it will be seen that proper feeding and care, cleanliness of quarters and yards will do much in the way of prevention. Clean, dry pens, regular and nutritious feeding, comfortable sleeping quarters, exposed to plenty of sunshine with the pens cleaned and disinfected regularly are factors necessary for keeping up the animals' vitality. Dipping when the weather is favorable, using any of the recognized effective mixtures is a very good plan to keep the hogs thrifty and free from lice and other pests. Many hog raisers feed the following mixture to aid digestion, stimulate circulation and to prevent worms:

Wood Charcoal, powdered,	.....	1 lb.
Sulphur,	.....	1 "
Sodium Chloride,	.....	2 "
" Bicarbonate,	.....	2 "
" Sulphate,	.....	2 "
" Hyposulphate,	.....	1 "
Antimony Sulphide (Black Antimony),	.....	1 "

Dose: 1 large tablespoonful to each 200 lbs. weight of animal daily; fed at varying intervals.

HOW TO DISINFECT.

There is no place on the farm where disinfectants are more useful than in hog houses or yards. Whitewash; air slacked lime; chloride of lime; stock dips; compounds of creosote; crude carbolic acid or other commercial disinfectants are commonly used. Pastures and hog lots may be improved by removing the hogs for a few weeks each year, and cleaning away all litter. The unused lots can be plowed and planted with a suitable forage crop. Precautions against contaminations of food and drinking water must be taken. Muddy yards soon become filthy and endanger the health of the animals. They should be well drained, and all wallow holes filled. It is poor practice to use pens and yards where drainage from other lots collects or puddles. The quarters where hog cholera has raged should be thoroughly cleaned; all walls, floors and troughs scraped, after which a good disinfectant should be applied with a brush or force spray pump. All litter should be removed and burned, the yards plowed and seeded, or where this is not practical, dry straw spread over the ground and burned will be effective. Crude oil applied with a body brush will effectually destroy lice and other external parasites. Repeat treatment in seven days until all nits are killed.

The following solutions are recommended for disinfecting the premises:

Compound of Creosote, ...	1	part	to	30	parts	water.
Crude Carbolic Acid, ...	1	"	"	30	"	"
Corrosive Sublimate, ...	1	"	"	800	"	"

Troughs should never be permitted to get sour or filthy as is often the case when the animals are overfed and fail to eat all that is put before them. The feeding of corn on cement or wooden floors is positive economy, especially where the yards are small and often muddy. Dry roomy sleeping quarters are essential during the winter months, and shady runs in summer. Pas-

tureless pigs are neither the most profitable, nor the most resistant to prevalent diseases.

CARE OF BREEDING STOCK.

Breeding stock should be kept in the open air and sunshine as much as possible during the year. Pasture runs alone will not suffice, but should be supplemented by foods especially adapted to bone and muscle development. The feed for the brood sow should be nutritious and bulky. Sliced roots, clover or alfalfa hay, either fed dry or as a chop feed is very palatable. Some corn may be fed, but ground oats, crushed peas or white middlings supply more nutriment for muscle and bone development. The importance of daily exercise for brood sows cannot be overestimated. Scattering grains of corn over large areas will force activity and cause needed exercise. If animals are confined to pens, walking the sows short distances each day will prove beneficial. After farrowing, as the pigs develop greater appetites, the sow should receive an increased amount of succulent feed. By-products from the dairy, such as skim milk or buttermilk. supplemented with a grain mixture made up of

	Nutritive Ratio,
4 lbs. Middlings,	
2 " Ground Oats,	
4 " Corn Meal,	1:6.1
2 " Ground Barley,	
½ " Oil Meal,	

fed in a thick slop in quantities sufficient to keep the milking mothers in a vigorous, not fleshy appearance, will prove useful. A mixture of the common products found on the farm is always preferable to any one grain; while grinding, cooking or soaking the feed, especially corn, is a waste of time and money. Barley, wheat or oats should be crushed. Alfalfa hay fed in slat racks is very nourishing and keeps the digestive system active.

A small low trough, accessible only to the young pigs, should be provided, and a little feed, preferably skim milk or thin midd-

lings with a little oil meal added, supplied. This tasty mixture will tempt the youngsters' growing appetite, and when they are encouraged to drink in this way weaning is comparatively easy. After the young pigs are weaned they should be well fed, provided with a grassy pasture or have access to a lot where they can obtain fresh green forage. This will tend to keep their digestive tract in good condition, and later, when ready for fattening, their digestive apparatus will be sufficiently developed to enable heavy feeding, and thus rapid and economical gains.

WHAT TO DO WHEN CHOLERA BREAKS OUT.

Since the serum treatment has given such excellent results when intelligently used, the first step should be toward securing some serum. As yet the State or Experiment Station has not provided for the production of the serum, but arrangements have been made by the Secretary of the Live Stock Commission for distributing serum at cost, and application should be made at once if danger exists. The cost varies with the size of the pig; seventy-five cents worth of the material being sufficient for a 150 lb. animal.

Inasmuch as the serum treatment is for well hogs, not sick ones, it is absolutely necessary to act without delay; and as the serum can be kept indefinitely in a cold place, it is good judgment to keep in close touch with the Secretary who will not only supply serum at cost *when available,* but otherwise direct the management of affected herds. Do not wait until your hogs are sick and some of them die; but fortify yourself against any loss as soon as the malady is reported in your neighborhood.

When writing to Prof. F. C. Minkler, Secretary to the Live Stock Commission, supply the following information at once and save valuable time:

1. Number of animals on hand.
2. Approximate weight and age.
3. When did you first notice sickness (in days)?
4. Number of sick animals. (Give symptoms.)

5. Number that have died.
6. Number still healthy.
7. What have you done since the outbreak?
8. Have you separated the well animals?
9. What are you feeding? How much?
10. Give names with addresses of other parties or neighbors whose herds are or have been infected with cholera in your vicinity.
11. Will you be responsible for serum ordered by wire and shiped by express C. O. D.?

It is hoped that provision will be made by the Legislature for the manufacture of this material, in which case a circular will be issued and circulated. Until such information is forthcoming proceed as above *at once,* and we can help you. Write or wire directly to the Secretary, Professor F. C. Minkler, New Brunswick, N. J., for such assistance.

YC 11642